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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
PIZIALI, ANDREW T	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 20040326

Application Number: 09/923,353
Filing Date: August 08, 2001
Appellant(s): BOIRE ET AL.

James J. Kelly
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/5/2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is substantially correct. The changes are as follows: The examiner has withdrawn the 35 U.S.C. 103(a) rejections of claims 25 and 29-30 as being unpatentable over USPN 6,284,314 to Kato in view of the arguments presented in the Appeal Brief. Therefore, Issue (3) only applies to claims 26-28.

(7) Grouping of Claims

Appellant's brief includes a statement that all the claims do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,721,054	Vandiest	2-1998
5,604,626	Teowee	2-1997
6,284,314	Kato	9-2001
4,664,934	Ito	5-1987
5,076,673	Lynam	12-1991
5,202,788	Weppner	4-1993

(10) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 25-27, 29-30 and 34-36 are rejected under 35 U.S.C. 102(e) as being anticipated by USPN 5,721,054 to Vandiest et al. (hereinafter referred to as Vandiest).

Regarding claims 25-27, 29-30 and 34-36, Vandiest discloses an article comprising a film comprising titania, which may be in the anatase crystal structure, on a glass substrate (column 2, lines 18-44 and column 3, lines 19-34). Vandiest discloses that the film thickness ranges from 35 to 90nm (column 3, lines 17-18).

Vandiest does not mention the specific crystallite average size, but considering the substantially identical methods of productions disclosed by Vandiest, compared with the methods disclosed by the applicants, it appears that the titania film of Vandiest possesses a crystallite average size between 60 and 100nm.

Regarding claim 26, Vandiest discloses an absorbent coating layer between the titania film and glass substrate (column 2, lines 18-30). The absorbent coating layer would form a barrier to alkali metals originating from the substrate.

Regarding claim 27, Vandiest does not mention the contact angle with water, but considering the substantially identical article disclosed by Vandiest, compared to the article disclosed by the applicants, it appears that the article of Vandiest possesses a contact angle with water below 5° after exposure to luminous rays.

Regarding claims 34-35, Vandiest discloses that the film comprising titania may also comprise tin oxide (column 4, lines 14-19).

Regarding claim 36, Vandiest discloses an absorbent coating layer between the titania film and glass substrate (column 2, lines 18-30). Vandiest further discloses that the absorbent layer may comprise chromium oxide, iron oxide and cobalt oxide (column 2, lines 52-57).

3. Claims 25-27, 29-30, 34-37, 39 and 44-45 are rejected under 35 U.S.C. 102(e) as being anticipated by USPN 5,604,626 to Teowee et al. (hereinafter referred to as Teowee).

Regarding claims 25-27, 29-30, 34-37, 39 and 44-45, Teowee discloses an article comprising a film comprising titania, which may be anatase crystal structure, on a glass substrate (column 6, lines 36-52, column 7, lines 26-63 and column 8, lines 45-53). Teowee discloses that the film comprising titania has a thickness range of about 10 to about 100,000nm (column 8, lines 3-22).

Teowee does not mention the specific crystallite average size, but considering the substantially identical methods of productions disclosed by Teowee, compared with the methods disclosed by the applicants, it appears that the titania film of Teowee possesses a crystallite average size between 60 and 100nm.

Regarding claims 26 and 36-37, Teowee discloses that the substrate may comprise a multi-layer thin film structure, which includes a thin coating of fluorine-doped tin oxide with additional undercoating thin film layers disposed between the fluorine-doped tin oxide layer and the underlying glass substrate (column 7, lines 3-17 and lines 53-58). The additional undercoating thin films would form a barrier to alkali metals originating from the substrate.

Regarding claim 27, Teowee does not mention the contact angle with water, but considering the substantially identical article disclosed by Teowee, compared to the article disclosed by the applicants, it appears that the coating of Teowee possesses a contact angle with water below 5° after exposure to luminous rays.

Regarding claims 34-35, Teowee discloses that the film comprising titania may be a composite of several materials including titania and tin oxide or titania and zirconium oxide (column 7, lines 53-63).

Regarding claim 39, Teowee discloses that the article may be used in a vehicular window (column 1, lines 12-16).

Regarding claims 44-45, Teowee discloses that the titania film may be a composite of titania and tantalum, iron, bismuth and/or cesium (column 7, lines 26-63).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,284,314 to Kato et al. (hereinafter referred to as Kato).

Regarding claims 26-28, Kato discloses an article comprising a thin film comprising titania, with anatase crystal structure, on a glass substrate (column 3, lines 52-65 and column 4, lines 37-48).

Kato does not mention the specific crystallite average size, but considering the substantially identical methods of productions disclosed by Kato, compared with the methods disclosed by the applicants, it appears that the titania film of Kato possesses a crystallite average size between 60 and 100nm.

Regarding claim 26, Kato discloses that the porous ceramic film may comprise a multi-layer film (column 3, lines 25-50). The lower layer(s) of the multi-layer film would form a barrier to alkali metals originating from the substrate.

Regarding claim 27, Kato does not mention the contact angle with water, but considering the substantially identical article disclosed by Kato, compared to the article disclosed by the applicants, it appears that the article of Kato possesses a contact angle with water below 5° after exposure to luminous rays.

Regarding claim 28, Kato discloses that the surface of the titania film has micropores and further discloses that the diameter of the micropores can be adjusted by changing the amount of polythethylene glycol or polyethyleme oxide or the molecular weight thereof (column 4, lines 14-36). Kato does not mention the specific root mean square rugosity of the titania film, but considering the microporous surface of article it appears that the article of Kato would possess such a rugosity by changing the amount of polythethylene glycol or polyethyleme oxide or the molecular weight thereof, as taught by Kato.

6. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,721,054 to Vandiest.

Vandiest discloses an article comprising a film comprising titania, which may be in the anatase crystal structure, on a glass substrate (column 2, lines 18-44 and column 3, lines 19-34). Vandiest does not specifically disclose using the article as a windshield, but does disclose that the article may be used for architectural buildings to provide occupants with protection against solar radiation by reflection and/or absorption and eliminating the dazzling effects of intense sunshine, giving an effective screen against glare, enhancing visual comfort and reducing eye fatigue (column 1, lines 17-27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the article as a windshield because protection against solar radiation by reflection and/or absorption, eliminating the dazzling effects of intense

sunshine, giving an effective screen against glare, enhancing visual comfort and reducing eye fatigue are all properties desired in a windshield.

7. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,721,054 to Vandiest in view of any one of USPN 4,664,934 to Ito et al. (hereinafter referred to as Ito), USPN 5,076,673 to Lynam et al. (hereinafter referred to as Lynam) and USPN 5,202,788 to Weppner.

Vandiest discloses an article comprising a film comprising titania, which may be in the anatase crystal structure, on a glass substrate (column 2, lines 18-44 and column 3, lines 19-34). Vandiest discloses that the glazing can be used for windows (column 1, lines 15-27), but fails to specifically mention using the coating on an electrically controlled variable absorption glazing. Ito, Lynam and Weppner all disclose (see abstracts) that it is known to use electrochromic devices (electrically controlled variable absorption devices) as windows. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the photocatalytic coating of Vandiest on an electrochromic device, because Vandiest discloses that the photocatalytic coating can be used on windows and the secondary references teach that windows can be made from electrochromic devices.

(11) Response to Argument

The appellant asserts that Vandiest fails to teach a coating that is photocatalytic or hydrophilic. The examiner respectfully disagrees. Vandiest discloses an article comprising a film comprising titania, which may be in the anatase crystal structure, on a glass substrate (column 2, lines 18-44 and column 3, lines 19-34). Vandiest discloses that the layers of the coated substrate may be deposited by thermal decomposition, such as by chemical vapor

deposition (CVD), of titanium precursors, such as a metallic halide precursors (column 5, lines 31-44 and column 7, lines 12-15). Considering that the appellant discloses that a substantially identical CVD method may preferably be used to deposit the layers of the coated substrate (page 13, lines 9-34 and page 24, lines 15-18), it appears that the properties of the coated substrate claimed by the appellant are possessed by the coated substrate taught by Vandiest. The appellant has failed to show, or even attempt to show, that the properties claimed are not inherently possessed by the coated substrate taught by Vandiest.

The Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

The appellant asserts that Vandiest fails to describe the claimed coated substrate because Vandiest teaches a layer (absorbent layer) of iron (Fe), cobalt (Co), and/or chromium (Cr) either between the titanium oxide layer (non-absorbent layer) and the glass substrate or on top of the titanium oxide layer (column 2, line 19 through column 3, line 35 and column 4, lines 20-30). The appellant asserts that iron, cobalt, and chromium oxides are well known to be poisons for photocatalysts and therefore, one of ordinary skill in the art would limit the contents of those metal oxides. The appellant appears to be suggesting that the presence of the Fe, Co, and/or Cr

oxide absorbent layer would destroy all photocatalytic activity in the titanium oxide non-absorbent layer. The examiner respectfully disagrees.

On page 5, lines 4-22, of appellant's specification, the appellant discloses that cobalt and iron oxides may be introduced into the claimed invention, such as a layer on top of the titanium oxide layer, to increase the photocatalytic effect. Further, in column 4, lines 49-62 and column 5, lines 11-15, of USPN 6,284,314 to Kato, Kato discloses that a layer of iron may be deposited on a photocatalytic layer of titanium oxide to increase photocatalytic performance. Clearly, in direct opposition to that asserted by the appellant in the appeal brief, iron and cobalt are not poisons for photocatalysts.

The appellant asserts that Teowee fails to teach a coating that is photocatalytic or hydrophilic. The examiner respectfully disagrees. Teowee discloses an article comprising a film comprising titania, which may be anatase crystal structure, on a glass substrate (column 6, lines 36-52, column 7, lines 26-63 and column 8, lines 45-53). Teowee discloses that the layers of the coated substrate may be deposited by a variety of methods including chemical vapor deposition (CVD) (column 5, lines 31-44). Considering that the appellant's discloses that CVD may preferably be used to deposit the layers of the coated substrate (page 13, lines 9-34 and page 24, lines 15-18), it appears that the properties of the coated substrate claimed by the appellant are possessed by the coated substrate taught by Teowee. The appellant has failed to show, or even attempt to show, that the properties claimed are not inherently possessed by the coated substrate taught by Teowee.

In regards to Teowee, the applicant asserts that in the absence of a binder, especially in Example 1, the coatings have very low mechanical strength and as a result of heating to 450°C or

350°C, in the absence of a binder, the photocatalyst behavior is not "effective." The examiner does not find appellant's argument persuasive because the appellant does not claim a binder, a specific mechanical strength, or a specific photocatalytic activity. It is not clear how appellant's argument is relevant to the current claims.

The arguments presented by the appellant regarding the thicknesses taught by Kato are moot in view of the examiner withdrawing the 35 U.S.C. 103(a) rejections of claims 25 and 29-30 as being unpatentable over USPN 6,284,314 to Kato.

The appellant asserts that Kato fails to teach or suggest titanium crystallites having an average size between 60 and 100nm (claims 26-28) or that the coating has a contact angle with water below 5 after exposure to luminous rays (claim 27). The examiner respectfully disagrees. Kato discloses an article comprising a thin film comprising titania, with anatase crystal structure, on a glass substrate (column 3, lines 52-65 and column 4, lines 37-48). Kato discloses that the layers of the coated substrate may be deposited by a variety of methods including by dip coating (column 3, lines 26-50). Considering that the appellant discloses that a dip coating method may be used to deposit the layers of the coated substrate (page 19, lines 26-39), it appears that the properties claimed by the appellant are possessed by the coated substrate taught by Kato. The appellant has failed to show, or even attempt to show, that the properties claimed are not inherently possessed by the coated substrate taught by Kato.

The appellant asserts that Kato fails to teach or suggest the claimed root mean square (RMS) rugosity (claim 28). The examiner respectfully disagrees. Kato discloses that the surface of the titania film has micropores and further discloses that the diameter of the micropores can be adjusted by changing the amount of polythethylene glycol or polyethyleme oxide or the

molecular weight thereof (column 4, lines 14-36). Kato does not mention the specific RMS rugosity of the titania film, but considering the microporous surface of article it appears that the article of Kato possesses or would possess such a rugosity by changing the amount of polythethylene glycol or polyethyleme oxide or the molecular weight thereof, as taught by Kato. The appellant has failed to show, or even attempt to show, that the coating taught by Kato does not inherently possess the claimed RMS rugosity.

The appellant appears to be asserting that Kato fails to teach or suggest an alkali barrier layer. The examiner respectfully disagrees. Kato discloses that the porous ceramic film may comprise a multi-layer film (column 3, lines 25-50). The lower layer(s) of the multi-layer film would form a barrier to alkali metals originating from the substrate.

The appellant appears to be asserting that Vandiest fails to teach or suggest using the coated substrate as a windshield. The examiner respectfully disagrees. Vandiest does not specifically disclose using the article as a windshield, but does disclose that the article may be used for architectural buildings to provide occupants with protection against solar radiation by reflection and/or absorption and eliminating the dazzling effects of intense sunshine, giving an effective screen against glare, enhancing visual comfort and reducing eye fatigue (column 1, lines 17-27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the article as a windshield because protection against solar radiation by reflection and/or absorption, eliminating the dazzling effects of intense sunshine, giving an effective screen against glare, enhancing visual comfort and reducing eye fatigue are all properties desired in a windshield.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

atp
April 27, 2004

ANDREW T. PIZIALI
PATENT EXAMINER

TERREL MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

Conferees
Terrel Morris
Deborah Jones

OBLON SPIVAK MCCLELLAND MAIER & NEUSTADT PC
FOURTH FLOOR
1755 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22202